

Remarks

Entry of the amendments and allowance of all pending claims are respectfully requested. Claims 1-4, 6-14, 16-25 & 27-34 are now pending.

Initially, applicants gratefully acknowledge the indication of allowance of claims 8-9, 18-19 & 29-30. By this paper, independent claims 1, 11, 21 & 22 are amended and new claims 32-34 are added to more particularly point out and distinctly claim the subject matter of the present invention. As amended, applicants' management approach includes automatically evaluating workload of the logical partition and automatically determining therefrom that configuration of the logical partition is to be adjusted. These concepts of automatically evaluating workload of the logical partition and automatically determining from that evaluation that the configuration of logical partition is to be adjusted are believed to comprise novel, non-obvious subject matter in view of the known art. The amendments are submitted in a bona fide attempt to advance prosecution of the application, and are not intended to acquiesce to the substance of the rejections contained in the Office Action mailed December 11, 2003. Support for the amendments to the independent claims, as well as for new claims 32-34 can be found throughout the application as filed, including, for example, pages 10, 25, & 30-34 of the specification. Thus, no new matter is believed added to the application by the amendments presented.

Substantively, claims 1-4, 11-14 and 21-25 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ellsworth et al. (U.S. Patent No. 6,453,344; hereinafter "Ellsworth") in view of Zalewski et al. (U.S. Patent No. 6,260,068; hereinafter "Zalewski"); and claims 6-7, 10, 16-17, 20, 27-28 and 31 were rejected under 35 U.S.C. 103(a) as being unpatentable over Ellsworth in view of Zalewski and further in view of George et al. (U.S. Patent No. 5,659,786; hereinafter "George"). Each of these rejections is respectfully traversed to any extent deemed applicable to the claims presented herewith.

Applicants' recited invention is directed to managing logical processors of a computing environment. For example, the number of logical processors that are to be configured to a logical partition are automatically evaluated based on workload of the logical partition and automatically adjusted based thereon (see, e.g., pp. 30-34 of applicants' specification). In one example, the automatically evaluating and automatically determining employ an equation to

determine whether the configuration is to be adjusted and this equation is based on workload of the logical partition (see, e.g., p. 32, lines 15-19, 26-29; and p. 33, lines 1-22).

In one example (i.e., claim 1), a method of managing logical processors of a computing environment is recited. The method includes, configuring a logical partition of a computing environment with one or more logical processors; automatically evaluating workload of the logical partition and automatically determining therefrom that the configuration of the logical partition is to be adjusted; and dynamically adjusting the configuration of the logical partition. Thus, in applicants' claimed invention, the determination of whether the logical partition is to be dynamically adjusted is automatic and is based on an evaluation of the workload of the partition. This is very different from the teachings of Ellsworth, Zalewski and George, either alone or in combination.

Ellsworth describes a system in which the total number of available CPUs of the system are partitioned into one or more smaller pools of CPUs, such that a smaller pool contains the CPUs actually used by a user. This reduces the licensing costs of the system, since the user only pays fees for the CPUs of the pool, instead of paying fees for all available CPUs of the system. At a later time, the user may request additional CPUs to be added to the pool. That is, the user may request additional CPUs, if the user determines that more CPUs are desired and is willing to pay for these additional CPUs. Thus, in Ellsworth, any adjustment in the configuration is user determined and requested, and is not automatically determined based on an automatic evaluation as claimed by applicants.

In particular, applicants respectfully submit that Ellsworth does not describe, teach or suggest applicants' claimed element of automatically evaluating workload of the logical partition and automatically determining therefrom that the configuration of the logical partition is to be adjusted. Instead, Ellsworth describes a manual process of reconfiguring an environment. That is, the user chooses whether the configuration is to be adjusted. This is specifically described throughout Ellsworth. As examples, in Col. 4, lines 1-2, it states: "[T]he user of the multiprocessor system 1-0 is able to establish domains ..." and in Col. 10, lines 4-15, it indicates that the customer may wish to change the number of off-line processors or the number of dedicated CPUs. Further, the examples of Cols. 10-11 recite that the user upgrades the machine

and the user edits the profiles. Each of these examples, teaches that the determination to reconfigure is made by the user and the reconfiguration is at the user's request. It is not automatically determined based on an automatic evaluation, as claimed by applicants. This deficiency of Ellsworth is recognized in the Office Action, which states that Ellsworth: "... does not show the automatically determining based on workload of logical partition that the configuration is to be adjusted." The Office Action relies upon Zalewski for this feature. However, applicants respectfully submit that Zalewski also fails to teach or suggest at least this feature of applicants' claimed invention.

The Office Action states that Zalewski teaches the dynamic reconfiguration of a multi-processor computer system without intervention of the system administrator (Col. 4, lines 50-53, "In accordance with ... of the system administrator"). However, applicants respectfully submit that a careful reading of Zalewski fails to uncover any discussion or suggestion that the workload of the logical partition is automatically evaluated and that based upon this automatic evaluation, there is a automatic determination that configuration of logical partition is to be adjusted.

Col. 4, lines 50-53 of Zalewski state:

In accordance with the principles of the invention, the migration can be initiated and carried out under control of the operating system instance "on the fly" without intervention of the system administrator.

The term "system administrator" in Zalewski appears to be an individual acting in a hardware administrator role, i.e., as an operator at a hardware console to set up and reconfigure a machine. Col. 7, lines 46-49 of Zalewski, state: "For example, a partition may be uninitialized due to a lack of sufficient resources at power up to run a primary CPU or when a system administrator is reconfiguring the computer system." This context implies a hardware console operation role for the system administrator since the partition is not initialized and cannot perform anything. Col. 29, lines 4-6 state: "This migration may take place under control of a system administrator or may be initiated by an operating instance without system administrator participation." Applicants respectfully submit that this sentence implies a delineation between the hardware role of the system administrator and a software (operating system instance) role.

A careful reading of Zalewski fails to uncover any suggestion or implication for workload driven automation of a reconfiguration of resources as recited by applicants.

Col. 4, lines 60-62 of Zalewski further state:

In accordance with this model, a first operating system instance which requires a resource first requests the resource from the second instance.

A careful reading of Zalewski fails to uncover any suggestion that the requirement for a resource is in any way related to an automatic evaluation of workload of a logical partition or an automatic determination therefrom that configuration of the logical partition is to be adjusted. Absent such teaching, applicants respectfully submit that there is no suggestion in the applied art of the recited technique for managing logical processors of a computing environment. To the extent that a resource can migrate from one partition to another in Zalewski, without system administrator intervention, could simply be the result of a command being executed by one of the instances. There is no suggestion that migration results from an automatic evaluation of workload of an instance.

Based on the foregoing, applicants respectfully request an indication of allowability of independent claims 1, 11, 21 and 22. The dependent claims are patentable for the same reasons as the independent claims, as well as for their own additional characterizations. In this regard, applicants note that George is cited in connection with dependent claim 6-7, 10, 16-17, 20, 27, 28 & 31. George also fails to teach or suggest the above-noted deficiencies of Ellsworth and Zalewski when applied against the independent claims.

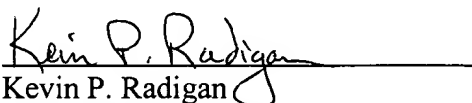
For example, George fails to teach or suggest automatically evaluating workload of a logical partition and automatically determining therefrom that the configuration of the logical partition is to be adjusted. Instead, George relies on a set of rules stated in a policy. It is explicitly stated throughout George that any configuration changes to be made are based on the policy. For example, in Col. 2, lines 56-60, it is stated, "Similarly, the present invention supports the process of dynamic merging, which includes adding resources to logical partitions, and activating additional logical partitions based on the policy." Further, in Col. 4, lines 53-55, it states "[P]olicy 106 determines that a configuration change is necessary." This policy includes a

set of explicit rules that dictate what is to happen. However, these rules do not include workload of the logical partition (see, e.g., Col. 6, lines 6-17). Applicants respectfully submit that there is no discussion in George of automatically evaluating workload of a logical partition, and automatically determining therefrom that the configuration of the logical partitions to be adjusted and then dynamically adjusting the configuration based thereon. There is no description in George of, for example, an equation that takes into consideration the percentage of CPC capacity assigned to a logical partition, percentage of CPC capacity currently being used by the partition etc. This is missing from George, and therefore, George does not teach or suggest this aspect of applicants' claimed invention.

Since Ellsworth, Zalewski and George each fail to teach or suggest at least applicants' claimed element of automatically evaluating workload of the logical partition and automatically determining therefrom that the configuration of the logical partitions to be adjusted, applicants respectfully submit that the independent claims, as well as the dependent claims patentably distinguish over the combination thereof. Thus, all claims are believed to be in condition for allowance and such action is respectfully requested.

Applicants invite the Examiner to contact their representative at the below-listed number, should the Examiner wish to discuss this application further.

Respectfully submitted,


Kevin P. Radigan
Attorney for Applicants
Registration No.: 31,789

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HESLIN ROTHENBERG FARLEY & MESITI P.C.
5 Columbia Circle
Albany, New York 12203-5160
Telephone: (518) 452-5600
Facsimile: (518) 452-5579